

REMARKS

Reconsideration and allowance of this application are respectfully requested in light of the above amendments and the following remarks.

Figs. 3, 4, 6-12, 14, and 16 have been amended to overcome the objections applied to the drawings and specification in Sections 1-6 of the Final Rejection.

With regard to the objection identified in Section 7 of the Final Rejection, the specification was amended in Applicants' Amendment dated April 3, 2008, to describe reference characters 18a and 18b, illustrated in Fig. 3.

Regarding the objection identified in Section 8 of the Final Rejection, the Applicants amended paragraphs 8, 43, and 143 of the published specification in their Amendment dated April 3, 2008, as requested in the Office Action dated January 9, 2008, and these paragraphs correspond to the paragraphs identified as [0006], [0020], and [0110] in Applicants' original specification.

Therefore, withdrawal of the asserted objections is warranted.

Support for the amendments to claims 1 and 9 is provided for example in Figs. 5A and 5B and paragraph [0064] of the published specification. (References herein to the specification and drawings are for illustrative purposes only and are not intended to limit the scope of the invention to the referenced embodiments.)

Claims 1, 2, and 7-9 were rejected, under 35 USC § 103(a), as being unpatentable over the Applicants' Description of the Related Art in view of Okubo et al. (US 5,264,807). Claims 3 and 6 were rejected, under 35 USC § 103(a), as being unpatentable over the Applicants' Description of the Related Art in view of Okubo and Moriyama et al. (US 5,903,823). Claim 4

was rejected, under 35 USC § 103(a), as being unpatentable over the Applicants' Description of the Related Art in view of Okubo and Mini-circuits NPL. Claim 5 was rejected, under 35 USC § 103(a), as being unpatentable over the Applicants' Description of the Related Art in view of Okubo, Mini-circuits, and Daniel et al. (US 4,243,955). To the extent these rejections may be deemed applicable to the amended claims, the Applicants respectfully traverse based on the points set forth below.

Claim 1 now defines an amplifier circuit that: (1) rotates phases of first and second local oscillating signals to have a 180° phase difference; (2) rotates the initial phase of a first constant-envelope signal by the negative amount of rotation applied to the first local signal and rotates the initial phase of a second constant-envelope signal by the negative amount of rotation applied to the second local signal; (3) frequency-converts the phase-rotated first and second constant-envelope signals using the phase-rotated first and second local oscillating signals, respectively, to generate frequency-converted first and second constant-envelope signals having the same initial phases as the first and second constant-envelope signals, respectively; and (4) combines the frequency-converted first and second constant-envelope signals. The claimed subject matter supports the ability to cancel the local oscillating signals that leak through the frequency conversion operations and harm the communication quality of the frequency-converted signals (see specification page 4, lines 13-17, and page 15, lines 16-27). More specifically, the claimed subject matter shifts the first and second local oscillating signals to have a 180° phase difference so that when their leakage signals are subsequently combined, the two leakage signals cancel one another out due to their 180° phase difference (see application page 4, lines 13-17, and application page 15, lines 16-27).

The Final Rejection acknowledges that the Applicants' Description of the Related Art does not disclose: (1) shifting the phases of first and second local oscillating signals, which are used to frequency convert desired signals, to have a 180° phase difference and (2) shifting the phases of first and second constant-envelope signals by the negative amounts of the phase rotations applied to the first and second local oscillating signals, respectively (see Final Rejection section 13). To overcome these deficiencies, the Final Rejection proposes that Okubo teaches the features (see sections 13-15). More specifically, the Final Rejection proposes that Okubo discloses feature (1) in the abstract and feature (2) in column 4, lines 26-39 (see Final Rejection sections 13-15).

However, the Applicants note that Okubo discloses the same subject matter in the cited portion of the abstract as is disclosed in column 4, lines 26-39. In both sections of the specification, Okubo discloses inverting the phase of one of two constant-envelope signals so that the two constant-envelope signals have a 180° phase difference (see Okubo Figs. 6 and 7, abstract lines 13-23, and col. 10 lines 21-25).

Okubo does not disclose a local oscillator signal that is used to frequency convert another signal. Thus, it necessarily follows that Okubo cannot disclose the Applicants' claimed subject matter of shifting the phases of first and second local oscillating signals, which are used to frequency convert desired signals, to have a 180° phase difference. And because Okubo does not disclose shifting the phases of first and second local oscillating signals, it necessarily follows that Okubo cannot disclose the Applicants' claimed subject matter of shifting the phases of first and second constant-envelope signals by the negative amounts of the phase rotations applied to the first and second local oscillating signals, respectively.

Furthermore, neither the Applicants' Description of the Related Art nor Okubo discloses the subject matter now recited in claim 1 wherein mixing the above-mentioned phase-shifted first and second local oscillating signals with the first and second constant-envelope signals generates frequency-converted first and second constant-envelope signals having the same phases, respectively, as the initial phases of the first and second constant-envelope signals. More specifically, because the phase shift applied to the first local oscillating signal is the same, but negative, amount as the phase shift applied to the first constant-envelope signal, the operation of mixing the two phase-shifted signals causes the frequency-converted signal to have the same phase that the first constant-envelope signal had before being phase shifted. The same holds for the frequency-converted signal generated by mixing the phase-shifted second local oscillating signal and the phase-shifted second constant-envelope signal.

Accordingly, the Applicants respectfully submit that the Applicants' Description of the Related Art and Okubo, considered individually or in combination, do not render obvious the subject matter now defined by claim 1. Independent claim 9 similarly distinguishes over the Applicants' Description of the Related Art and Okubo. Therefore, the rejections applied to claims 3-6 are deemed to be obviated, and allowance of claims 1 and 9 and all claims dependent therefrom is warranted.

In view of the above, it is submitted that this application is in condition for allowance and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,

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Date: September 29, 2008
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